

PATENT ABSTRACTS OF JAPAN

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(54) SHEET EXHAUST TRAY

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a sheet exhaust tray which involves no risk of generating a jam even if a stopper of tray lies on the way between its service position and the accommodated position and which can hold the printed sheets of paper in aligned condition in good performance when the stopper lies in the service position.

SOLUTION: A stopper 26 is installed so that its positioning is adjustable in the sheet exhausting direction, and that surface 28 of the stopper 26 which contacts with the sheet of paper has a bow shape extending in the vertical direction with the inclination increasing gradually as going up from the lower part and is equipped with a friction surface 37 so as to exert resistance to the sheet exhausted. On the way, the sheet is fed along the stopper surface 28 to be exhausted in good performance, and in the normal service position, it can not go up the surface 28 owing to the resistance of the friction surface 37, but remains on the surface 28.



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CLAIMS

[Claim(s)]

[Claim 1] The stopper in contact with the point of the form which is the delivery tray which receives the form discharged from a recording device, and was discharged The stopper side which justification of is enabled in the eject direction of a form, is established, and contacts the aforementioned stopper's form The delivery tray characterized by having the friction surface which has a segment configuration to which an inclination becomes large gradually as it is prolonged in the vertical direction and goes to the upper part from a lower part, and gives resistance to the discharged form.

[Claim 2] The aforementioned friction surface is a delivery tray according to claim 1 which has the frictional resistance on which a form can slide on a friction surface when the driving force for being discharged by the form discharged is added.

[Claim 3] The aforementioned friction surface is a delivery tray according to claim 1 or 2 currently formed in the sheet-like member prolonged in the direction of a laminating of the form discharged.

[Claim 4] The aforementioned sheet-like member is a delivery tray according to claim 3 constituted with silicone rubber.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[The technical field to which invention belongs] this invention relates to the delivery tray used in order to be attached in recording devices, such as a printer, and to hold a delivery tray and the printed form in detail.

[0002]

[Description of the Prior Art] Conventionally, the delivery tray for holding the printed form discharged from the printing section which prints a form is attached in recording devices, such as a printer. as this kind of an eccrisis tray, it is shown in drawing 5 , for example -- as -- the fixed tray 1 and the movable tray 2 -- having -- the eject direction (the direction shown by the arrow 4 in drawing 5 --) of a form When enabling the slide of the movable tray 2 and using it to the fixed tray 1 Although it is not shown in drawing when pulling out the movable tray 2, considering as the state of an operating position as shown by the imaginary line and not using it on the other hand, the thing of the receipt formula which can be contained by pushing in the direction contrary to the pulled-out direction, and making it located in a stowed position is known well.

[0003] Moreover, although the printed form is compulsorily discharged with the eccrisis roller 3 formed in the recording device and it falls on a delivery tray, in order to make it the form discharged with sufficient vigor not fall from the nose-of-cam side of a delivery tray, the stopper 5 is formed in the point of the movable tray 2 in the shape of a perpendicular to the movable tray 2. And it enables it to hold the discharged form on a delivery tray by making the point of the form discharged by this stopper 5 contact in the state of alignment (state shown by the imaginary line 6 in drawing 5).

[0004]

[Problem(s) to be Solved by the Invention] However, in the delivery tray of such a receipt formula, if the movable tray 2 is not pulled out even in a normal operating position when using it, a paper jam may be produced. Namely, the movable tray 2 shown as the solid line of drawing 5 Are in the state where it was located in the position in the middle of between an operating position and a stowed position, and it sets in such the state. While being discharged with the eccrisis roller 3, when the printed form 7 is discharged While the point of a form 7 cannot already contact a stopper 5 and the point of a form 7 cannot move to an eject direction any more Since the back end section of a form 7 is sent out to an eject direction by the drive of the after that of the eccrisis roller 3, a form 7 comes to be compressed by it and produces the state of a paper jam as shown in drawing 5 by it.

[0005] The purpose of this invention is to offer the delivery tray which is in an alignment state and can hold the printed form good, when a paper jam is not caused and a stopper is located in an operating position, even if it is made in order to solve the above-mentioned trouble, and the stopper of a delivery tray is located in a position in the middle of between an operating position and a stowed position.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, invention according to claim 1 The stopper in contact with the point of the form which is the delivery tray which receives the form discharged from a recording device, and was discharged The stopper side which justification of is enabled in the eject direction of a form, is established, and contacts the aforementioned stopper's form It is characterized by having the friction surface which has a segment configuration to which an inclination becomes large gradually as it is prolonged in the vertical direction and goes to the upper part from a lower part, and gives resistance to the discharged form.

[0007] Since the stopper side where the point of a form contacts though a stopper is located in a position in the eject direction of a form in the middle of between an operating position and a stowed position is formed in the segment configuration according to such composition, the point of a form can be moved to an eject direction along a stopper side, and a form can overcome this stopper. Therefore, a paper jam is not produced. Since the frictional resistance from a friction surface is given to the point of the discharged form on the other hand when a stopper is located in a normal

operating position therefore, movement to the eject direction of a form is suppressed. Furthermore, since the inclination is becoming large gradually as this stopper side goes to the upper part from a lower part even if the discharged form tends to go up on the stopper side prolonged in the vertical direction, the point of the form which has received the resistance from a friction surface stops the stopper side of an inclination which becomes large at ascent ***** on a stopper side. Therefore, the form discharged on a delivery tray can be held good in the state of alignment.

[0008] Moreover, invention according to claim 2 is characterized by the aforementioned friction surface having the frictional resistance on which a form can slide on a friction surface, when the driving force for being discharged by the form discharged is added in invention according to claim 1. When the frictional resistance of a friction surface was too large and a stopper is located in a position the middle, there is a possibility of checking the form discharged moving to an eject direction along a stopper side. Therefore, when the driving force for being discharged by the form discharged is added, by giving the frictional resistance on which a form can slide on a friction surface to a friction surface, good movement to the eject direction of a form in a position is secured the middle, and a paper jam is prevented effectively.

[0009] Moreover, invention according to claim 3 is characterized by forming the aforementioned friction surface in the sheet-like member prolonged in the direction of a laminating of the form discharged in invention according to claim 1 or 2. Even if the laminating of the form discharged one by one by forming a friction surface as a sheet-like member prolonged in the direction of a laminating of the form discharged is carried out on the delivery tray, a friction surface The form which the whole front face is not closed by these forms by which a laminating is carried out, and can always function effectively, therefore is discharged on a delivery tray can be further held in the state of alignment to fitness.

[0010] Moreover, invention according to claim 4 is characterized by constituting the aforementioned sheet-like member with silicone rubber in invention according to claim 4. Moderate frictional resistance can be given to the form discharged by forming a sheet-like member with silicone rubber. And since silicone rubber is easy to come to hand, such an effect is comparatively realizable by the low cost.

[0011]

[Embodiments of the Invention] Drawing 1 is the cross section of the side which shows the important section of 1 operation gestalt which materialized the delivery tray of this invention. Moreover, drawing 2 is the plan showing the sub electrode holder and stopper of the delivery tray in drawing 1. 1 operation gestalt of the delivery tray of this invention is explained using these drawing 1 and drawing 2.

[0012] The delivery tray 11 shown in drawing 1 and drawing 2 is attached in a recording device 12, and it is used in order to receive and hold the printed form which is discharged from a recording device 12. The form printed in the printing section (not shown) of the recording device 12 equipped with a print head, a platen roller, etc. is arranged at the downstream of the printing section, and is sent to the eccrisis roller 13 which has two rollers. And the printed form is discharged with sufficient vigor by rotation of the eccrisis roller 13 in the direction of an arrow 14. In order to receive the form discharged from the eccrisis roller 13, the delivery tray 11 is the lower part of the eccrisis roller 13, and is arranged at the lower part of a recording device 12.

[0013] This delivery tray 11 is equipped with the plate-like fixed tray 15 and the plate-like movable tray 16 which consists of a resin, the back end section of the fixed tray 15 is supported at the posterior part side of a recording device 12, and the movable tray 16 is supported in the state where the inferior surface of tongue of the fixed tray 15 and the upper surface of the movable tray 16 counter. And in the eject direction (direction shown by the arrow 14 in drawing 1.) of a form, as for the fixed tray 15 and the movable tray 16, the movable tray 16 is connected free [a slide] to the fixed tray 15. The engagement salient 17 is formed in the posterior part upper surface in the movable tray 16, and, on the other hand, the piece 18 of a back end stop and the piece 19 of a nose-of-cam stop which engage with the engagement salient 17 are prepared in the back end section and the point at the bottom in the fixed tray 15, respectively. And by making the piece 18 of a back end stop of the fixed tray 15 stop the engagement salient 17 of the movable tray 16, as the imaginary line in drawing 1 shows, the fixed tray 15 sets the movable tray 16 caudad, and it is held in the stowed position contained by the fixed tray 15 in the shape of a polymerization. On the other hand, by making the piece 19 of a nose-of-cam stop of the fixed tray 15 stop the engagement salient 17 of the movable tray 16, the movable tray 16 is held in them of the fixed tray 15 in the operating position in which the upper surface is exposed, as the solid line in drawing 1 shows.

[0014] Moreover, the discharged form 20 was received in the rear upper surface of the fixed tray 15, and posterior supporter 15A is provided in it so that it can hold with a good posture. And the sub electrode holder 21 which holds the discharged form 20 with the movable tray 16 is attached in the point of the movable tray 16. As this sub electrode holder 21 is shown in drawing 2, it consists of a lever-like member of an outline wave, and the both ends 22 and 23 are supported by the rockable in the point of the movable tray 16. Moreover, as shown in drawing 1, the crevice 24 which can contain the sub electrode holder 21 is formed in the upper surface of the movable tray 16, and the sub electrode holder 21 is made to rock between the storing position stored in the crevice 24 of the movable tray 16, and the

expansion positions which are prolonged to them of the movable tray 16 and hold a form 20 in arrow 25 direction in drawing 1 . In addition, the sub electrode holder 21 is located in an expansion position in drawing 1 .

[0015] And when using the delivery tray 11, position fixation is carried out in an operating position, and an expansion position is made to rock the sub electrode holder 21 stored in the crevice 24 of the movable tray 16 by pulling out in the operating position which shows the movable tray 16 contained under the fixed tray 15 as a solid line, and making the piece 19 of a nose-of-cam stop of the fixed tray 15 stop the engagement salient 17 of the movable tray 16. Moreover, in this state, in order to hold as an alignment state where the form discharged one by one is shown by the imaginary line 40, the simultaneously coincidence of the length from the back end section of the fixed tray 15 to the point of the sub electrode holder 21 is made to be carried out with the length of the form 20 discharged. On the other hand, when containing the delivery tray 11, a storing position is made to rock the sub electrode holder 21 in an expansion position. After storing the sub electrode holder 21 in the crevice 24 of the movable tray 16, the movable tray 16 in an operating position is pushed to the fixed tray 15 side. In a stowed position, position fixation is carried out by making it located in the stowed position shown by the imaginary line, and making the piece 18 of a back end stop of the fixed tray 15 stop the engagement salient 17 of the movable tray 16.

[0016] And in the delivery tray 11 constituted in this way, the stopper 26 is formed in the point of the sub electrode holder 21 with this operation gestalt. This stopper 26 is for making it the form 20 discharged with sufficient vigor toward the direction shown by the arrow 14 from the eccentric roller 13 not fall from the nose-of-cam, i.e., nose of cam of sub electrode holder 21, side of the delivery tray 11.

[0017] As this stopper 26 consists of a resin and it is shown in drawing 2 , it is a plane view abbreviation rectangle-like. Two slots 33 and 34 which go to a point from a stopper's 26 back end section are formed in the position of both sides which separated the predetermined interval from the crosswise center section. While the pieces 29 and 30 of attachment for attaching in the sub electrode holder 21 are formed in the marginal part of these slots 33 and 34, respectively, in a stopper's 26 both-sides edge Steps 35 and 36 are formed, respectively and the pieces 31 and 32 of attachment for attaching in the sub electrode holder 21 are formed also in the marginal part of these steps 35 and 36, respectively. And the stopper 26 is attached in the point of the sub electrode holder 21 free [desorption] through the pieces 29, 30, 31, and 32 of these attachment. And as shown in drawing 3 , the slot formed in a stopper's 26 pieces 31 and 32 of attachment fits into the front end section of the sub electrode holder 21.

[0018] Moreover, as this stopper's 26 upper surface is formed as a stopper side 28 for making the form 20 to which paper was delivered contact and is shown in drawing 1 , the stopper side 28 is in a state which is prolonged in the vertical direction, and the stopper 26 is attached in the sub electrode holder 21. And in this state, the stopper side 28 has a segment configuration to which an inclination becomes large gradually as it goes to the upper part from a lower part.

[0019] Moreover, the friction surface 37 of the shape of a plane view rectangle prolonged in the eject direction of a form is formed in the crosswise center section of the stopper side 28. This friction surface 37 has the form which is for giving resistance to the discharged form 20, and is discharged in the middle of the discharge from the discharge roller 13, and when the driving force from the discharge roller 13 has joined the form, it has the frictional resistance on which a form can slide on a friction surface 37. It is fabricated as a sheet-like member prolonged in the direction of a laminating in which the laminating of the form discharged one by one is more specifically carried out to the delivery tray 11, and is constituted by silicone rubber.

[0020] Thus, the prepared operation of a stopper 26 is explained using drawing 1 and drawing 4 . As the movable tray 16 shown as the solid line in drawing 1 was mentioned above, the state where it is located in an operating position is shown, and the movable tray 16 in drawing 4 shows the state where it is located in a position in the middle of between a stowed position and an operating position. In drawing 4 , since the distance from the discharge roller 13 to a stopper 26 is shorter than the length of the form 38 discharged when the movable tray 16 is located in a position the middle, the point of this form 38 arrives at the stopper side 28 in the state where the driving force from the discharge roller 13 has still joined the back end section of a form 38. However, since the stopper side 28 is formed in the segment configuration, the point of a form 28 is guided good along the stopper side 28 at an eject direction, and the form 38 with which the driving force from the discharge roller 13 is added can overcome a stopper 26 toward the direction of an arrow 39. Therefore, a paper jam is not produced. Moreover, without checking movement to the eject direction of the form 38 which driving force requires, since it has the frictional resistance on which a form 38 can slide on a friction surface 37 when the driving force from the discharge roller 13 has joined the form 38 in this case, the friction surface 37 could secure good movement to the eject direction of a form 38, and has prevented the paper jam effectively.

[0021] On the other hand, as shown in drawing 1 , when the point of the form 20 discharged when a stopper 26 was located in a normal operating position arrives at the stopper side 28, the driving force from the discharge roller 13 is not added, but a form 20 is only the vigor discharged from the discharge roller 13, and contacts the stopper side 28. And since the frictional resistance from a friction surface 37 is given therefore, movement to the eject direction of a form 20

is suppressed by the form 20 in contact with the stopper side 28. moreover, the stopper side 28 where the point of the form 20 which has received the resistance from a friction surface 37 by it being alike, and following and the inclination becoming large gradually for which this stopper side 28 goes to the upper part from a lower part becomes large [an inclination] even if the discharged form 20 tends to go up on the stopper side 28 prolonged in the vertical direction -- upper **** -- things are not made but it stops on the stopper side 28 In this case, since the friction surface 37 is formed as a sheet-like member prolonged in the direction of a laminating of the form discharged, Even if the laminating of the form discharged one by one is carried out on the delivery tray 11, a friction surface 37 The form which the whole front face is not closed by these forms by which a laminating is carried out, and can always function effectively, therefore is discharged one by one on the delivery tray 11 can be held good in the state of alignment as shown by the imaginary line 40 in drawing 1 . The moderate frictional resistance mentioned above in the form discharged by constituting this sheet-like member from silicone rubber can be given, and moreover, since silicone rubber is easy to come to hand, such an effect is comparatively realizable by the low cost.

[0022] A user pulls out the movable tray 16 carelessly like by [which were described above] attaching a stopper 26 like this operation form in the delivery tray 11. Or when it is going to contain and the movable tray 16 is located in a position in the middle of between a stowed position and an operating position When a paper jam cannot be caused, and a form can be made to discharge good and the movable tray 16 is located in a normal operating position, it is in an alignment state and the printed form can be held good.

[0023] In addition, with this operation gestalt, although prepared in a part of stopper side 28, as long as it may form a friction surface 37 in the whole and it gives the above resistance to not only silicone rubber but a form, you may make it composition which can use anything of the quality of the material, and gives resistance geometrically. Moreover, although the stopper 26 was attached in the sub electrode holder 21, you may make it attach in the movable tray 16 directly with this operation gestalt.

[0024] Furthermore, although this operation gestalt explained the delivery tray 11 of the receipt formula which the movable tray 16 slides to the fixed tray 15, if not only this but a stopper is the thing of the type which can be justified in the eject direction of a form, it can apply to all, longitudinal adjustment of a delivery tray is not attained, but it can apply also to what only a stopper can move onto a delivery tray.

[0025]

[Effect of the Invention] Since the stopper side which was described above and where the point of a form contacts though a stopper is located in a position in the eject direction of a form like in the middle of between an operating position and a stowed position according to invention of a claim 1 is formed in the segment configuration, the point of a form can be moved to an eject direction along a stopper side, and a form can overcome this stopper. Therefore, a paper jam is not produced. Since the frictional resistance from a friction surface is given to the point of the discharged form on the other hand when a stopper is located in a normal operating position therefore, movement to the eject direction of a form is suppressed. Furthermore, since the inclination is becoming large gradually as this stopper side goes to the upper part from a lower part even if the discharged form tends to go up on the stopper side prolonged in the vertical direction, the point of the form which has received the resistance from a friction surface stops the stopper side of an inclination which becomes large at ascent ***** on a stopper side. Therefore, the form discharged on a delivery tray can be held good in the state of alignment.

[0026] Moreover, when the driving force for being discharged by the form discharged is added according to invention according to claim 2, by giving the frictional resistance on which a form can slide on a friction surface to a friction surface, good movement to the eject direction of a form in a position can be secured the middle, and a paper jam can be prevented effectively. Moreover, by forming a friction surface as a sheet-like member prolonged in the direction of a laminating of the form discharged according to invention according to claim 3 Even if the laminating of the form discharged one by one is carried out on the delivery tray, a friction surface The form which the whole front face is not closed by these forms by which a laminating is carried out, and can always function effectively, therefore is discharged on a delivery tray can be held in the state of alignment much more good.

[0027] Moderate frictional resistance can be given to the form discharged by forming a sheet-like member with silicone rubber, and moreover, since silicone rubber is easy to come to hand, such an effect is comparatively realizable by the low cost according to invention according to claim 4.

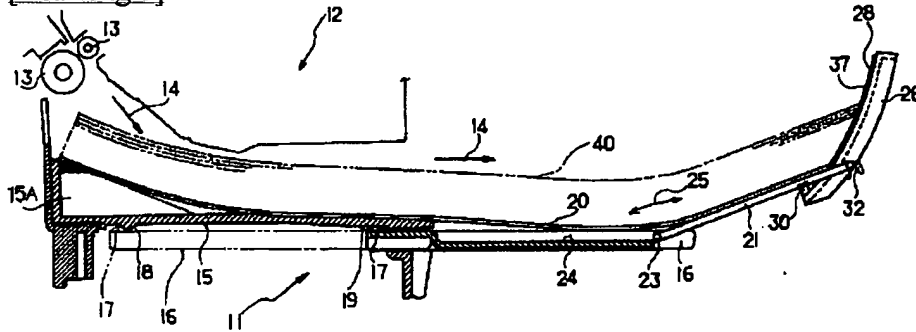
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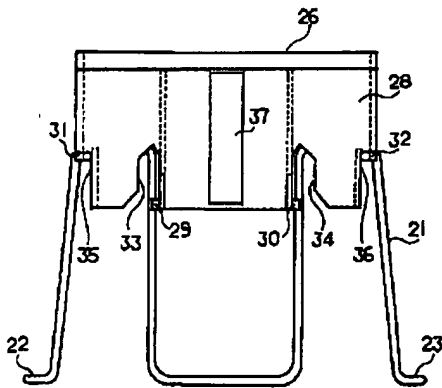
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DRAWINGS

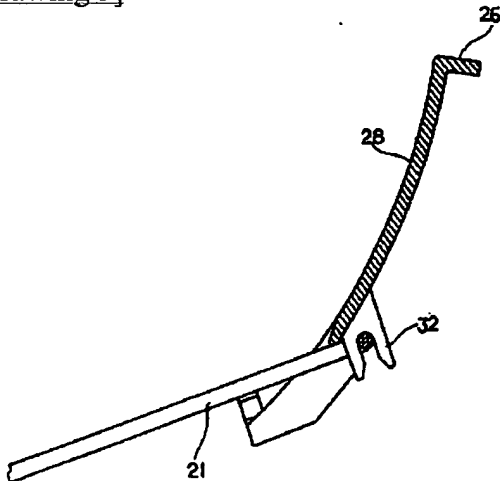
[Drawing 1]



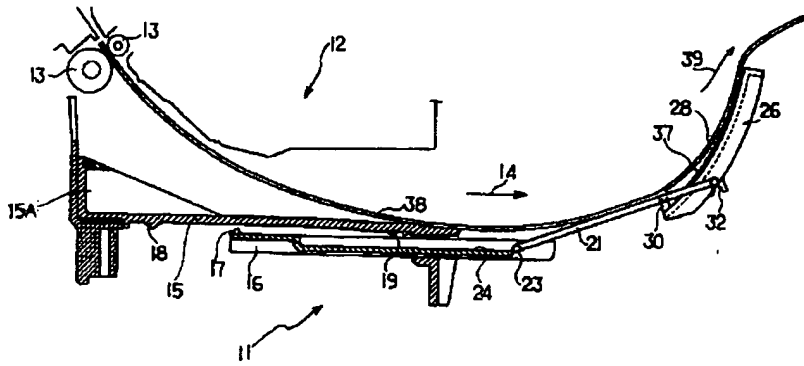
[Drawing 2]



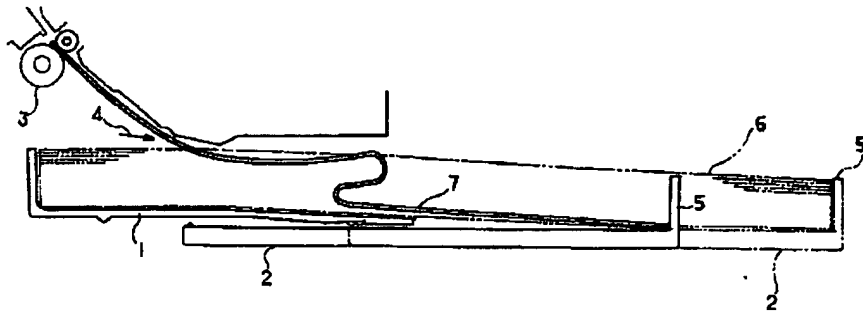
[Drawing 3]



[Drawing 4]



[Drawing 5]



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